

REMARKS

At the outset, Applicants wish to thank Examiner Soohoo for the courtesy extended to the undersigned and to Christine McCormack during a telephonic interview held on September 12, 2003. Applicants hereby amend the claims and present remarks consistent with the discussion therein.

Status of the Claims

Prior to entry of this Amendment, claims 1-2, 6-7, 18, 26, 27, 28-30, 33, 35, 39, 46, and 47 are pending in the application. Amended claims 1 and 27, are independent claims under consideration.

The pending claims stand rejected as follows:

- Claim 17 under 35 U.S.C. §112, second paragraph, as being indefinite;
- Claims 1-2, 6-7, 18, 27, 28-30, 33, 35 39 and 47 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,307,964 to Dudgeon et al. ("Dudgeon");
- Claims 1, 23, 25, 27, 35, 39, 43 and 45 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,688,406 to Dickinson et al. ("Dickinson");
- Claims 1, 4, 5, 17, 18, 27, 32, and 35 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Number 6,277,332 to Sucholeiki ("Sucholeiki"); and
- Claims 26 and 46 under 35 U.S.C. § 103(a) as unpatentable over Dudgeon, Dickinson, or Sucholeiki.

In light of the above amendments and remarks presented herein, Applicants respectfully request reconsideration and withdrawal of all grounds of rejection of pending claims.

Amendments to the Claims

Applicants have amended claims 1, 17, and 27, and added new claims 48-58 to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been introduced by these amendments; support being found in the claims as originally filed and throughout the specification; at least at page 12, lines 13-31; page 14, line 31 to page 15, line 4;

page 15, lines 16-34; page 16, lines 2-3 and 18-20; page 17, line 2; page 18, lines 14-24; page 20, line 31 to page 21, line 26; and page 30, line 24 to page 32, line 6.

New dependent claim 48 is directed to the apparatus of claim 1 wherein the processor comprises a device for moving the sample from a first location to a second location. It is substantially identical in scope to original claim 16, which was cancelled without prejudice in the Response to Restriction Requirement filed on March 26, 2003, as drawn to a non-elected invention of Group IV. Applicants note the claim 17, which depends directly from claim 16, belongs to the elected invention of Group I, and submit that claim 16 (now renumbered as claim 48) should belong to Group I, as well. Accordingly, Applicants respectfully request reconsideration of the restriction requirement with respect to claim 16 and entry of new claim 48.

Insofar as the instant patent application is subject to a restriction requirement, Applicants respectfully submit that new dependent claims 49-58 properly belong to the previously elected claim group.

Rejection Under 35 U.S.C. §112, Second Paragraph

Claim 17 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite, because this claim depends from now-cancelled claim 16. As noted above, Applicants submit that original claim 16 belongs to the elected invention of Group I. Applicants hereby reintroduce this claim as new claim 48, and amend claim 17 so that claim 17 now depends from new claim 48 that is substantially identical in scope to the original claim 16. Applicants submit that, as amended, claim 17 duly complies with the requirements of 35 U.S.C. §112, second paragraph, and respectfully request reconsideration and withdrawal of this rejection.

Dudgeon Fails to Anticipate the Claimed Invention

Briefly, Dudgeon discloses a sonic agglomeration system for removing fine particles suspended in the aerosol. The system includes a chamber 12 which is excited at one end by an exponential horn 14 acting as a sound source generating a frequency of between 700 to 2,800 Hz and is terminated at the other end with a sound reflecting plate 16. The sound waves within the chamber 12 are resonated so as to obtain a nearly infinite standing wave ratio. In operation, fine particles in chamber 12, accelerated by the sound waves, collide and stick to larger particles

whose movement is not affected by sound waves. See Dudgeon col. 2, lines 49-65, col. 3, lines 49-55 and col. 8, lines 62-63.

Dudgeon fails to teach or suggest the sonic energy source that “generates a wavetrain substantially converging in a focal zone having a diameter less than about 2 cm,” the reaction vessel “preventing the sample from contacting the medium,” and the processor for “controlling at least one of the sonic energy source and the location of the vessel relative to the focal zone,” as recited in Applicants’ claim 1, as amended. Dudgeon also fails to teach or suggest at least the steps of “generating a sonic energy wavetrain substantially converging in a focal zone having a diameter of less than about 2 cm, exposing the sample to the sonic energy wavetrain through a medium while preventing the sample from contacting the medium; and controlling at least one of the sonic energy and a location of the sample relative to the focal zone,” as recited in Applicants’ amended claim 27.

As discussed during the interview, in contrast to Applicants’ amended claims 1 and 27, rather than *preventing* the sample from contacting the medium, Dudgeon discloses a chamber where the particles are purposefully in contact with a flow of air that conducts sound waves. See Dudgeon, col. 2, lines 50-65 and col. 5, lines 8-10. Also, Dudgeon’s sonic waves emitted into the chamber are unfocussed and do not converge in a focal zone having a diameter less than about 2 cm. Further, Dudgeon does not teach or suggest controlling at least one of the sonic energy source and the location of the sample relative to the focal zone, recited in Applicants’ claims 1 and 27, as amended.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the §102 rejection of the amended claims 1 and 27, based on Dudgeon. Because claims 2, 6-7, 18, 28-30, 33, 35, 39 and 47 depend either directly or indirectly from claims 1 or 27, and recite further limitations thereon, Applicants respectfully request that the Examiner reconsider and withdraw the Dudgeon-based §102 rejections of those claims, as well.

Dickinson Fails to Anticipate the Claimed Invention

Briefly, Dickinson teaches an apparatus and methods for filtering particulate matter. The apparatus in Dickinson includes two ultrasonic wave generators for generating ultrasonic waves,

which superpose in a region of a flowing fluid body. Ultrasonic wave patterns passively transport particulate matter suspended in the flowing fluid away from a portion of the fluid, thereby filtering the particulate matter. See Dickinson, col. 3, lines 32-36 and 57-67 and col. 7, lines 29-46.

Dickinson fails to teach or suggest the sonic energy source that "generates a wavetrain substantially converging in a focal zone having a diameter less than about 2 cm," the reaction vessel "preventing the sample from contacting the medium," and the processor for "controlling at least one of the sonic energy source and the location of the vessel relative to the focal zone," as recited in Applicants' claim 1, as amended. Dickinson also fails to teach or suggest at least the steps of "generating a sonic energy wavetrain substantially converging in a focal zone having a diameter of less than about 2 cm, exposing the sample to the sonic energy wavetrain through a medium while preventing the sample from contacting the medium; and controlling at least one of the sonic energy and a location of the sample relative to the focal zone," as recited in Applicants' amended claim 27.

As discussed during the interview, in contrast to Applicants' amended claims 1 and 27, rather than *preventing* the sample from contacting the medium, Dickinson discloses a chamber where the particles, the flowing fluid, and the sonic waves mix. Also, just like in Dudgeon, Dickinson's sonic waves emitted into the chamber are unfocussed and do not converge in a focal zone having a diameter less than about 2 cm. Further, Dickinson does not teach or suggest controlling at least one of the sonic energy source and the location of the sample relative to the focal zone, recited in Applicants' claims 1 and 27, as amended.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the §102 rejection of the amended claims 1 and 27, based on Dickinson. Because claims 23, 25, 35, 39, 43, and 45 depend either directly or indirectly from claims 1 or 27, and recite further limitations thereon, Applicants respectfully request that the Examiner reconsider and withdraw the Dickinson -based §102 rejections of those claims, as well.

Sucholeiki Fails to Anticipate the Claimed Invention

Briefly, Sucholeiki teaches an apparatus and methods for running simultaneous solid phase reactions in small volumes of fluid which contain a plurality of reactants. The apparatus in Sucholeiki includes a reaction plate disposed in a water bath and having a plurality of reaction wells each having a reaction vessel inserted therein. The water bath further includes ultrasonication means that include sonicating cup horns and converters generating a sonicating region. The ultrasonication means are used to mix and enhance the yield of reactions in the reaction vessels fixedly disposed in the reaction plate. See Sucholeiki col. 3, line 66 to col. 4, line 4; col. 9, lines 36-52; col. 11, lines 15-33, and col. 15, lines 42-50

Sucholeiki fails to teach or suggest the sonic energy source that “generates a wavetrain substantially converging in a focal zone having a diameter less than about 2 cm” and the processor for “controlling at least one of the sonic energy source and the location of the vessel relative to the focal zone,” as recited in Applicants’ claim 1, as amended. Sucholeiki also fails to teach or suggest at least the steps of “generating a sonic energy wavetrain substantially converging in a focal zone having a diameter of less than about 2 cm” and “controlling at least one of the sonic energy and a location of the sample relative to the focal zone,” as recited in Applicants’ amended claim 27.

As discussed during the interview, Sucholeiki is completely silent about focusing the ultrasonic waves. Moreover, wavelengths of sonic energy emitted by the exemplary transducers disclosed in Sucholeiki in water range from about 3.7 cm (at a frequency of 40 kHz) to about 7.4 cm (at a frequency of 20 kHz). See Sucholeiki, col. 14, lines 2-4 and col. 15, lines 9-41. Thus, in contrast to Applicants’ claims, Sucholeiki’s waves do not converge in a focal zone having a diameter less than about 2 cm. Furthermore, Sucholeiki does not teach or suggest controlling at least one of the sonic energy source and the location of the sample relative to the focal zone, as recited in Applicants’ amended claims 1 and 27.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the §102 rejection of the amended claims 1 and 27, based on Sucholeiki. Because claims 4, 5, 17, 18, 32, and 35 depend either directly or indirectly from claims 1 or 27, and recite further

limitations thereon, Applicants respectfully request that the Examiner reconsider and withdraw the Sucholeiki-based §102 rejections of those claims, as well.

Rejection Under 35 U.S.C. §103(a)

As explained above, Dudgeon and Dickinson do not teach or suggest preventing the sample from contacting the coupling medium, as required by Applicants' amended claims 1 and 27. Furthermore, Dudgeon, Dickinson, and Sucholeiki fail to teach or suggest either a sonic energy source that generates a wavetrain substantially converging in a focal zone having a diameter less than about 2 cm or controlling at least one of the sonic energy source and the location of the sample relative to the focal zone.

Because Dudgeon, Dickinson, or Sucholeiki, alone or in combination, do not teach or fairly suggest every limitation of independent claims 1 and 27, as amended, Applicants respectfully request that the Examiner reconsider and withdraw the rejections under 35 U.S.C. § 103(a) of claims 26 and 46, that depend directly from independent claims 1 and 27, respectively.


CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration, withdrawal of all grounds of rejection, and allowance of claims 1-2, 4-7, 17-18, 23, 25-30, 32, 33, 35, 39, 43 and 45-58 in due course. The Examiner is invited to contact Applicants' undersigned representative by telephone at the number listed below to discuss any outstanding issues.

Respectfully submitted,

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